

Figure 1

TOP SECRET



Figure 2

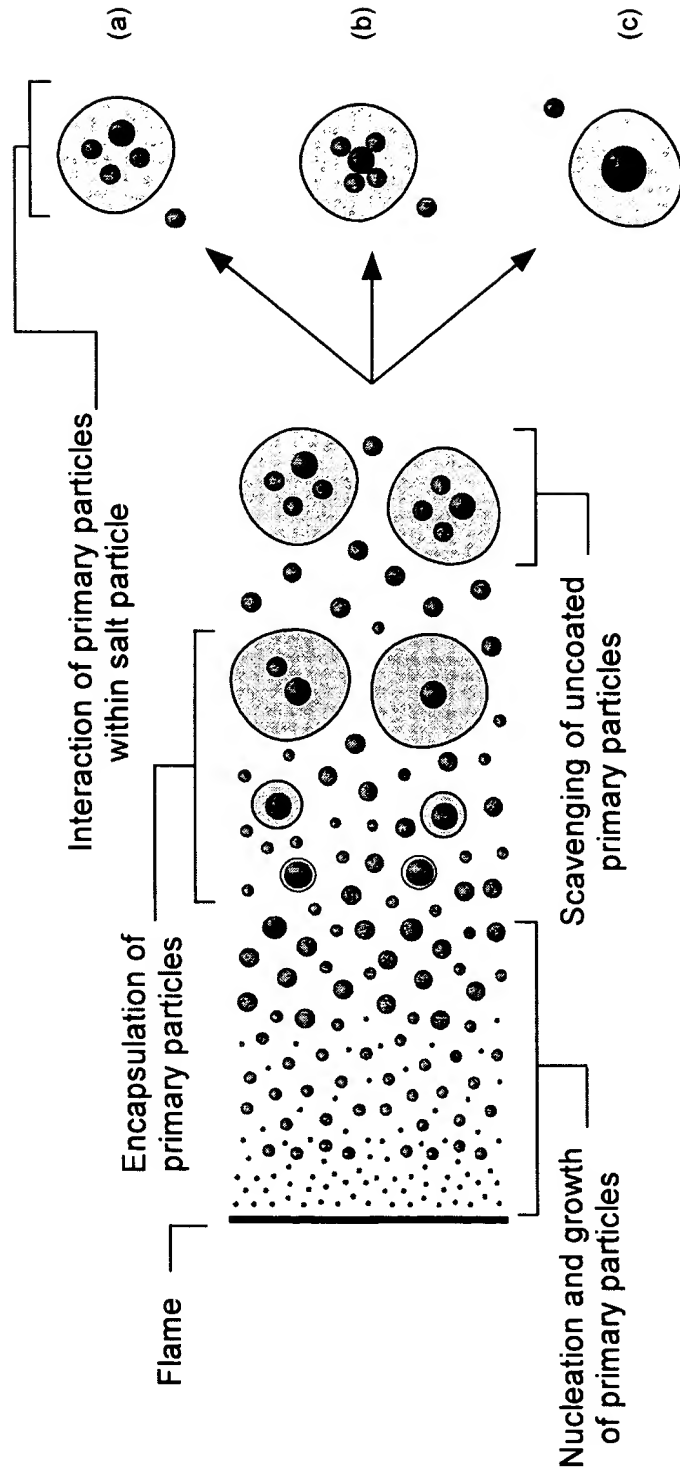


Figure 3

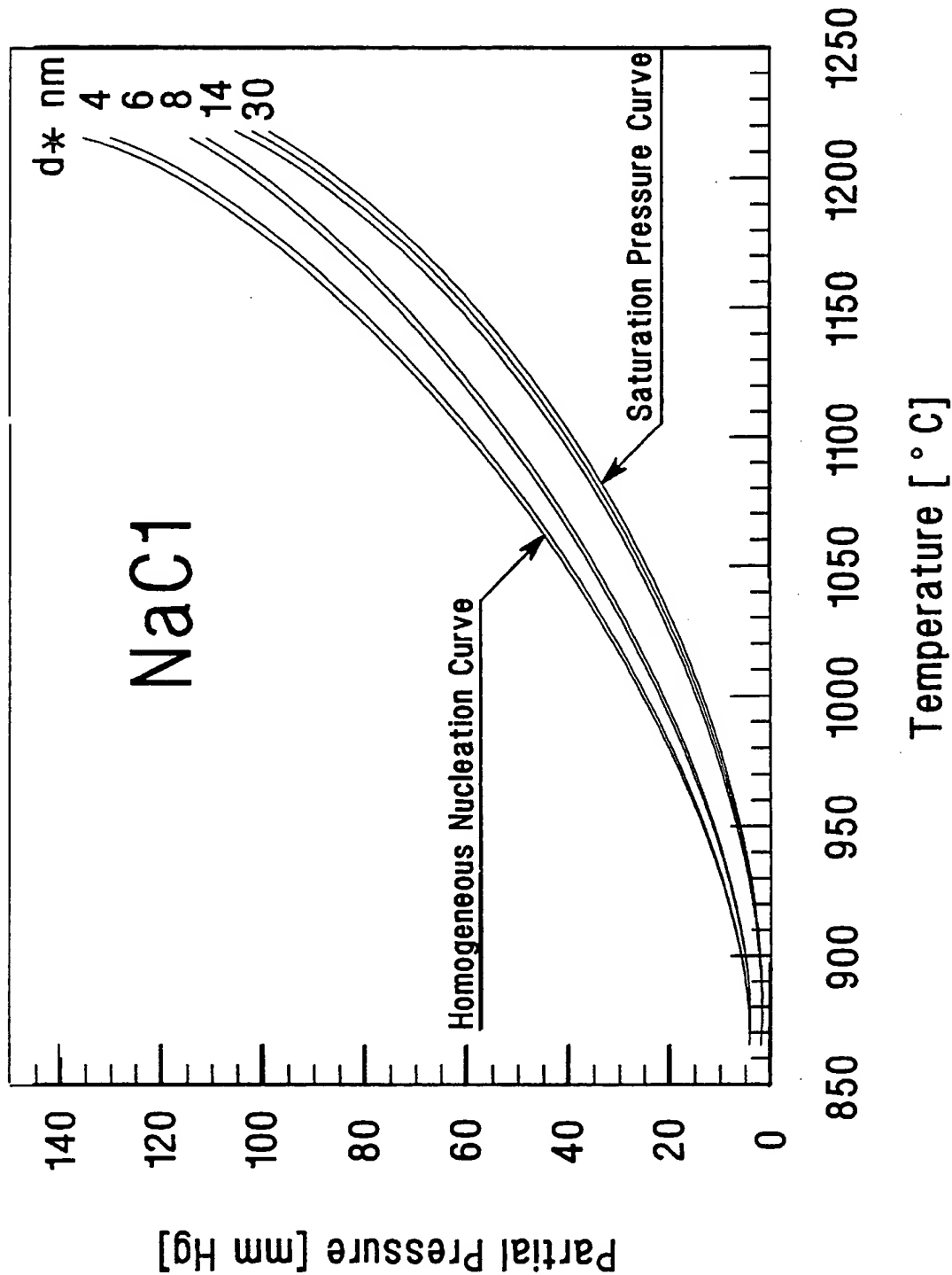


FIG. 4

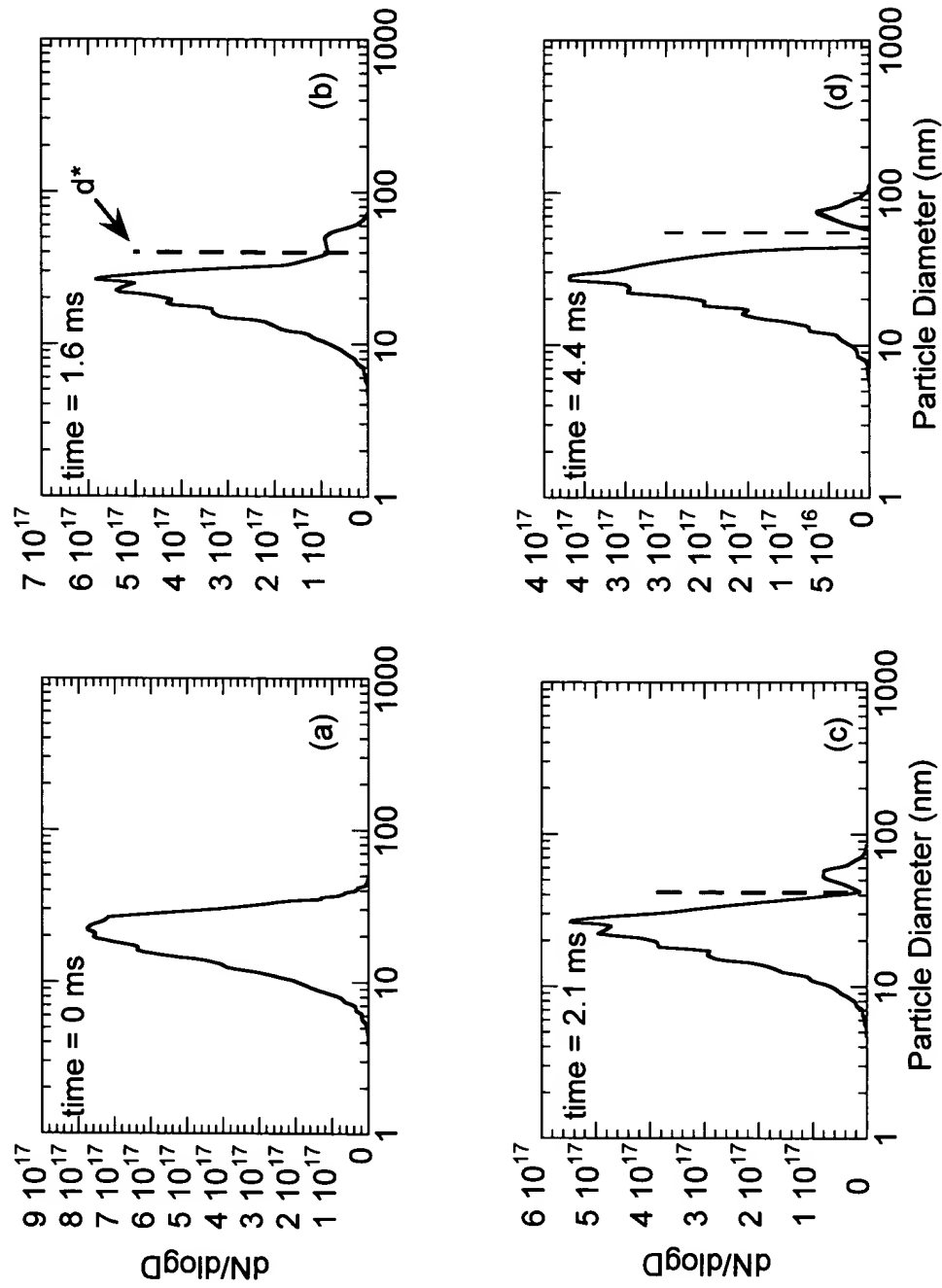


Figure 5

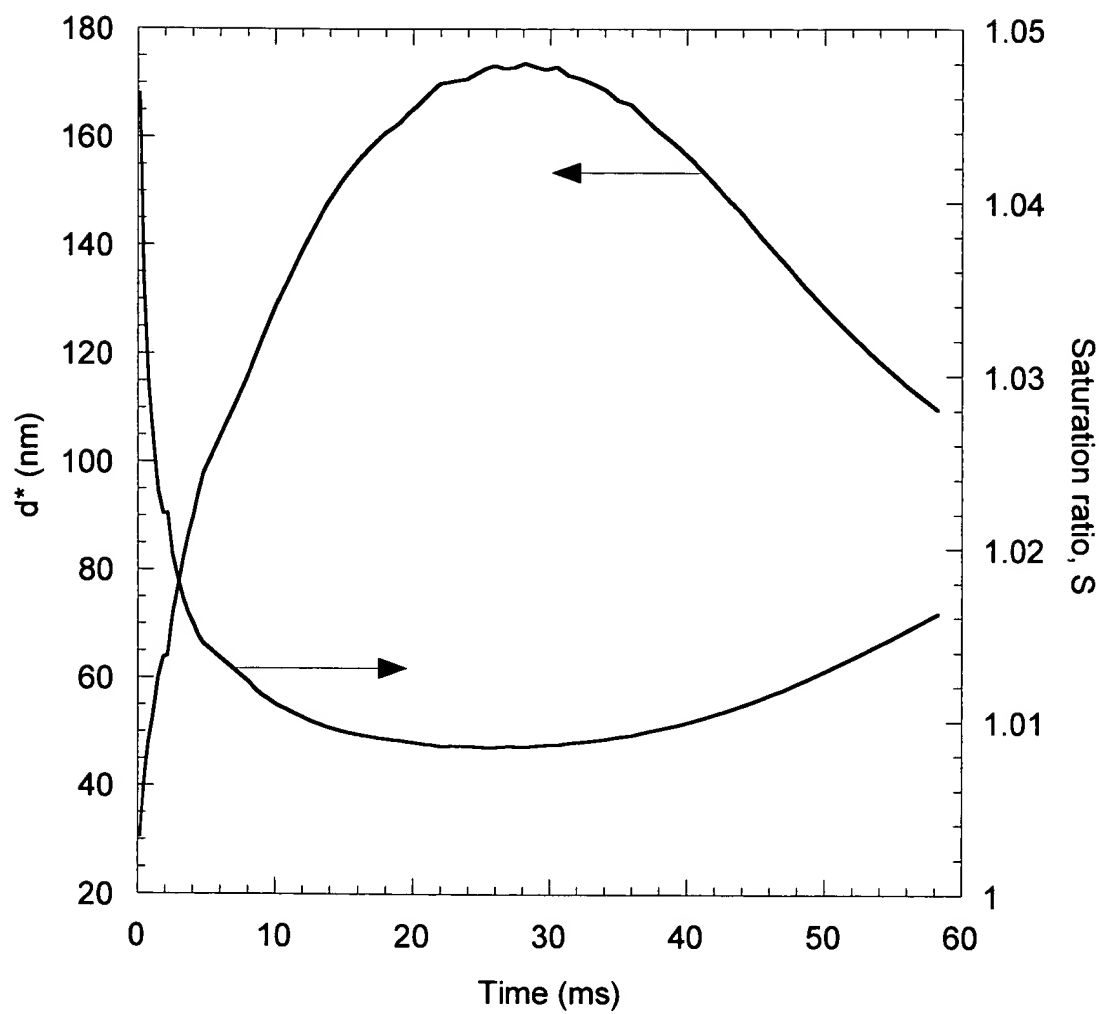


Figure 6

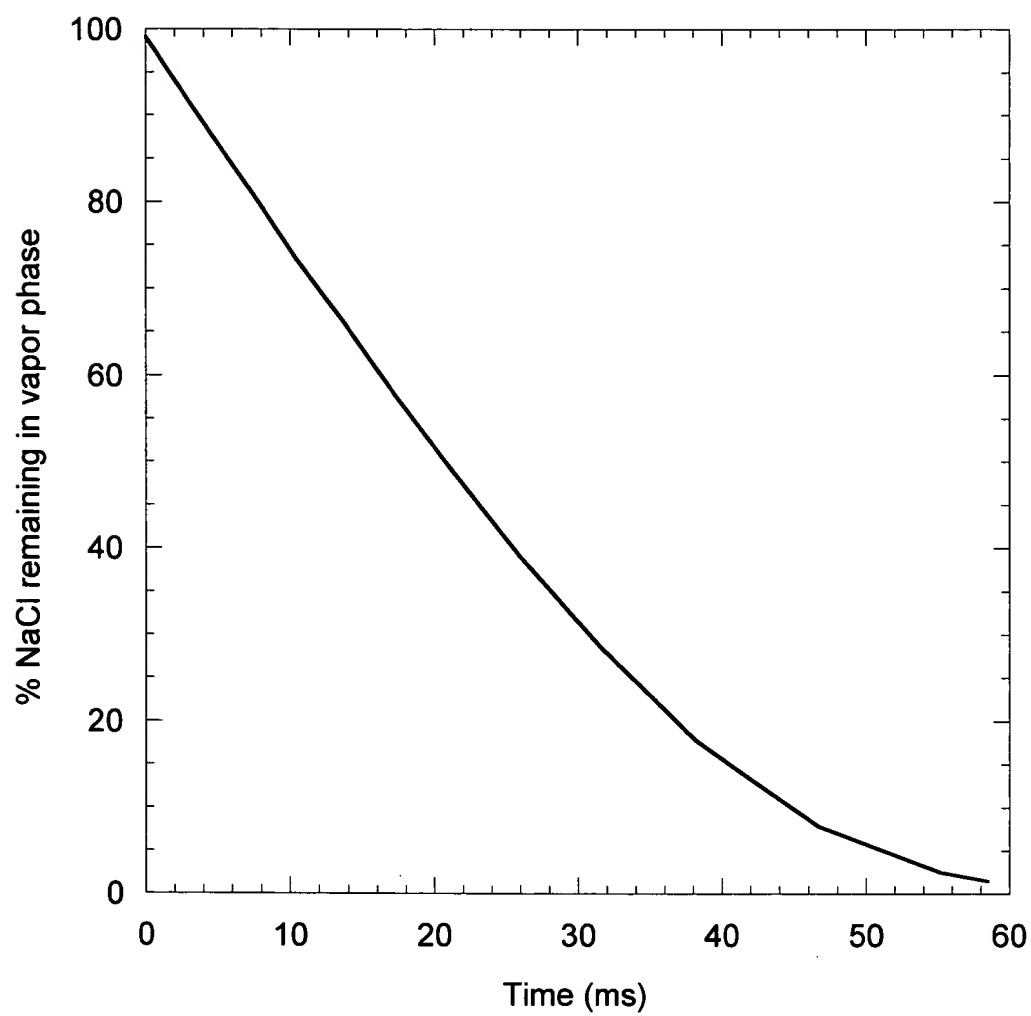


Figure 7

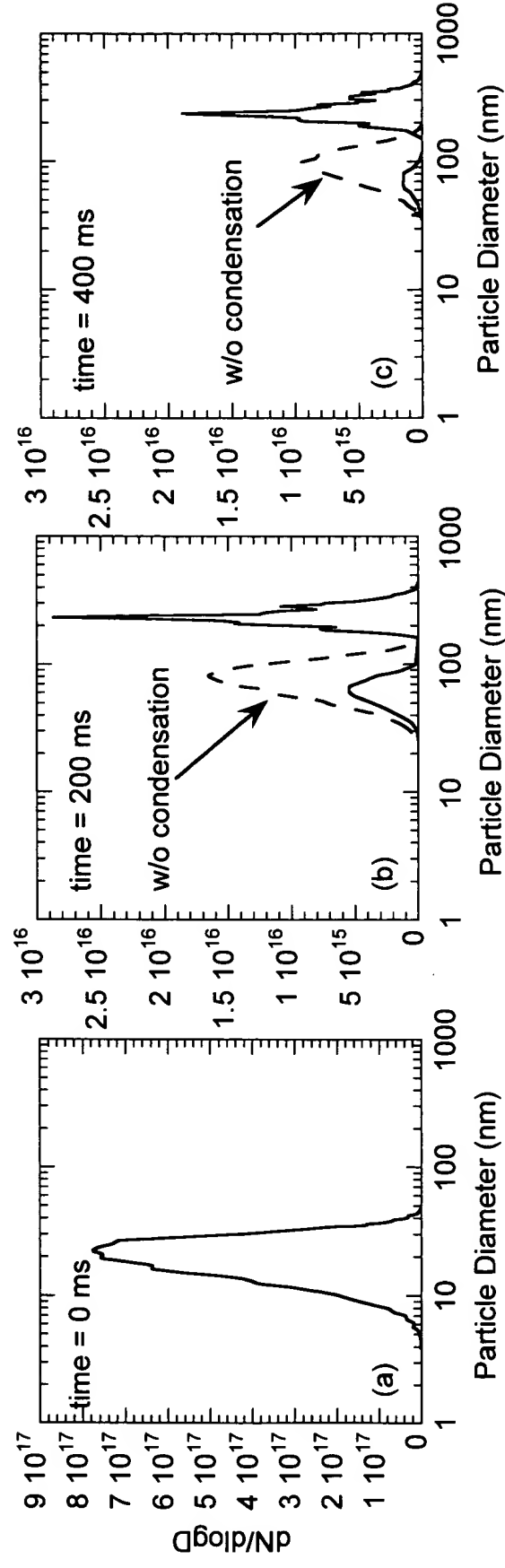


Figure 8

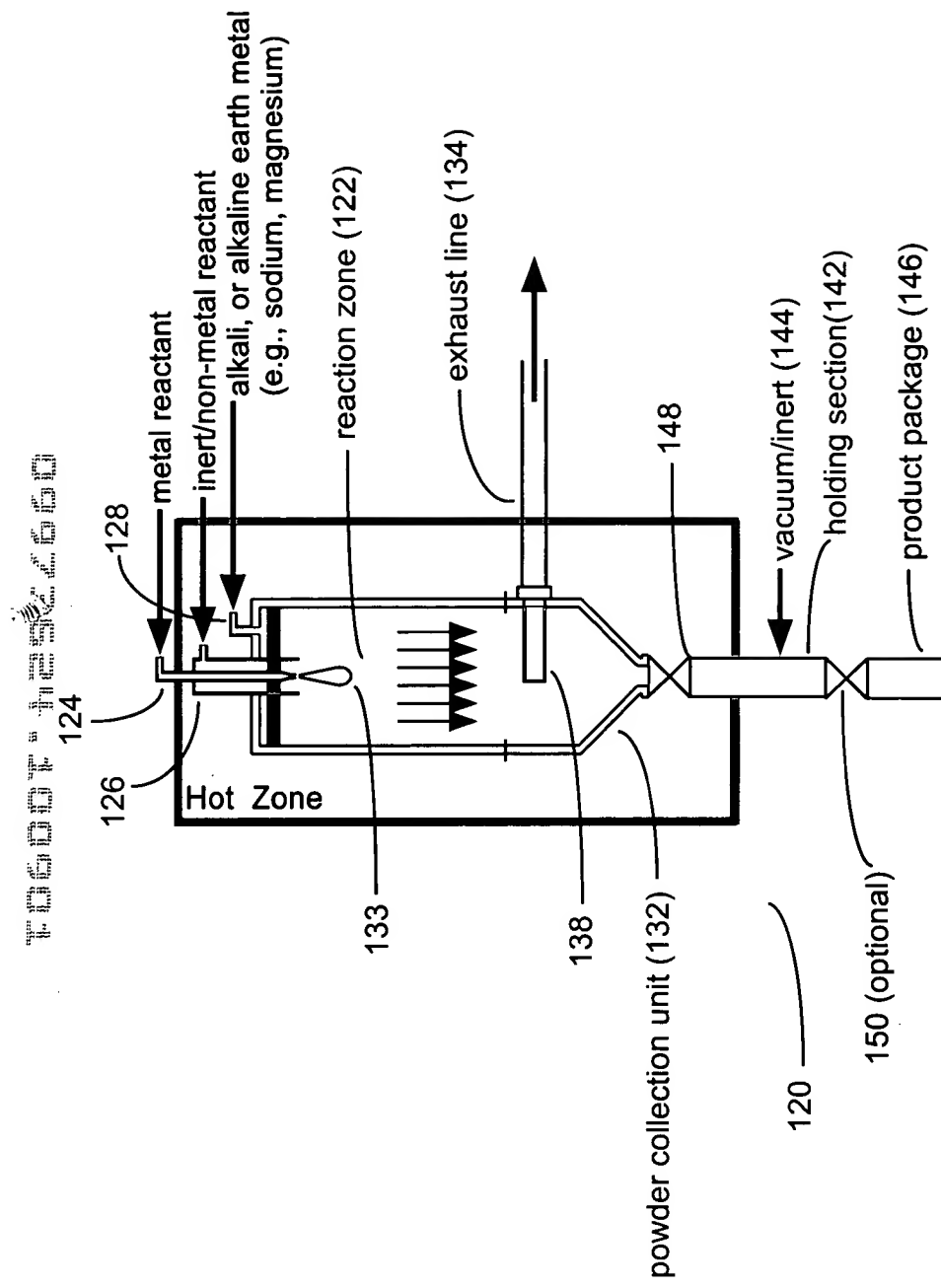


Figure 9

FIGURE 10

Run Condition	TaCl ₅ (g/min)	TaCl ₅ Carrier (sccm Ar)	Inner Coflow (sccm Ar)	Liquid Na (g/min)	Na Carrier (slpm Ar)	T _{wall} (°C)	d _j (mm)
Ta-1	0.22	70.5	107.5	0.45	10.61	700	2.16
Ta-2	0.71	85.5	107.5	0.45	10.61	700	2.16
Ta-3	0.22	70.5	107.5	0.95	10.61	700	2.16
Ta-4	0.71	85.5	107.5	0.95	10.61	700	2.16
Ta-5	0.22	70.5	246.3	0.45	10.61	900	2.16
Ta-6	0.71	85.5	107.5	0.95	10.61	900	2.16
Ta-13	0.22	70.5	246.3	0.45	10.61	810	2.16
Ta-14	0.22	70.5	313.5	0.58	6.49	810	2.16
Ta-15	0.22	70.5	313.5	0.83	6.49	810	2.16
Ta-16	0.22	70.5	313.5	1.18	6.49	810	2.16
Ta-17	0.22	70.5	313.5	0.58	6.49	900	2.16
Ta-18	0.22	70.5	313.5	0.83	6.49	900	2.16
Ta-20	0.71	27.3	176.9	0.58	6.49	900	2.16
Ta-21	0.71	27.3	107.5	0.83	6.49	900	2.16
Ta-22	0.22	12.3	176.9	0.58	6.49	900	2.16
Ta-23	1.84	177.8	631.5	1.71	11.64	900	0.51
Ta-24	1.84	177.8	631.5	1.71	9.05	900	0.51
Ta-25	1.84	177.8	631.5	1.71	6.49	900	0.51
Ta-26	1.84	177.8	1097.2	1.71	11.64	837.5	0.51
Ta-27	1.84	177.8	631.5	1.71	9.05	837.5	0.51
Ta-28	1.84	177.8	631.5	1.71	6.49	843.5	0.51
Ta-29	1.84	177.8	631.5	1.71	11.64	750	0.51
Ta-30	4.76	184.5	631.5	2.00	29.7	787.5	0.51

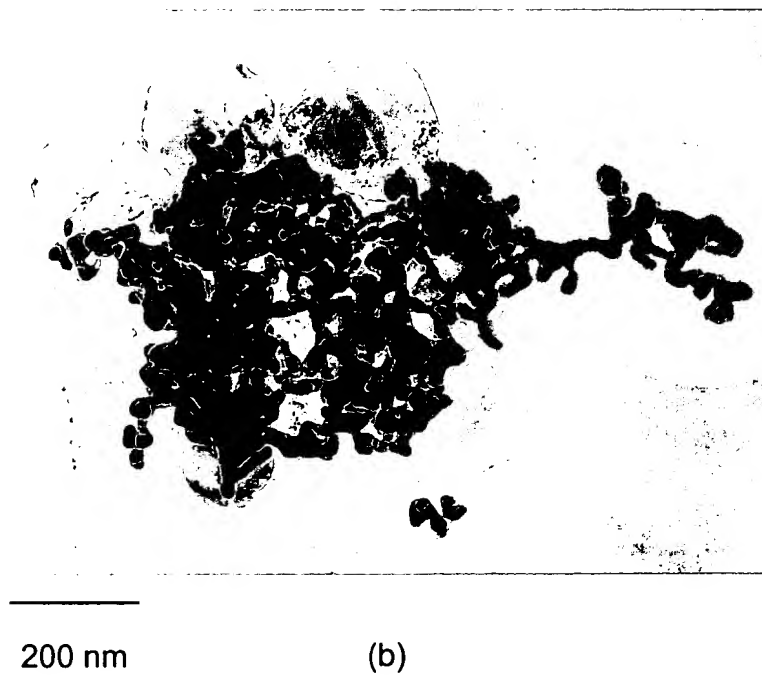
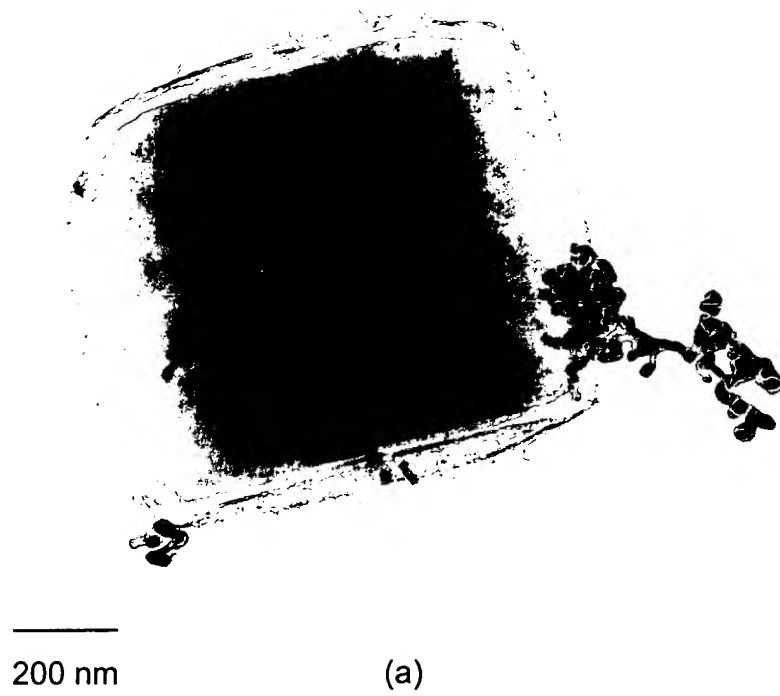


Figure 11

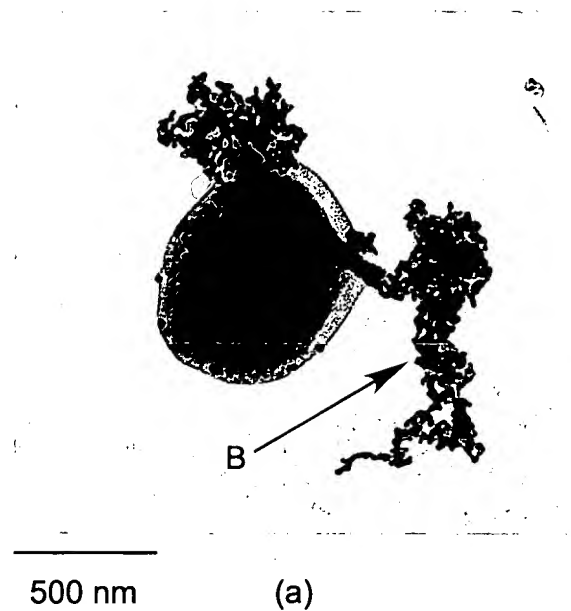


Figure 12

FOOT-129260



450 nm

Figure 13

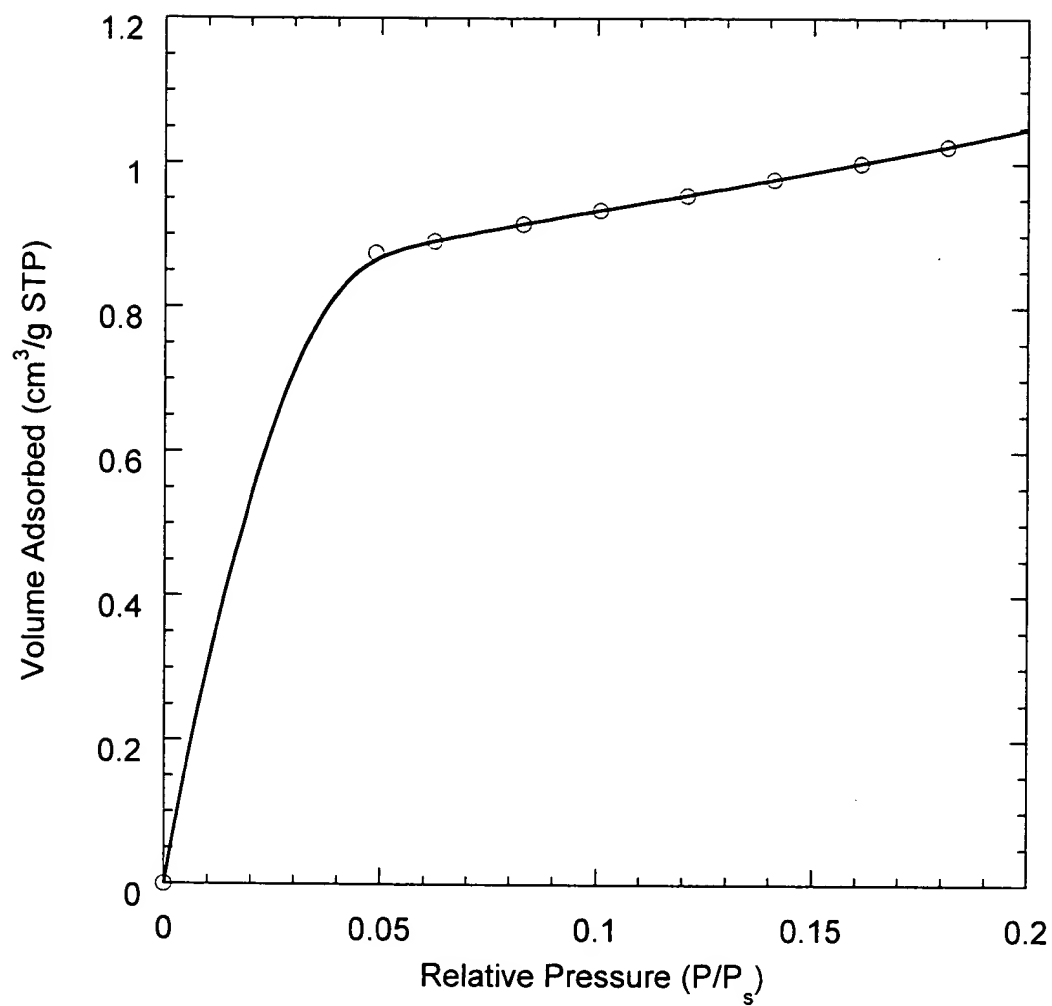
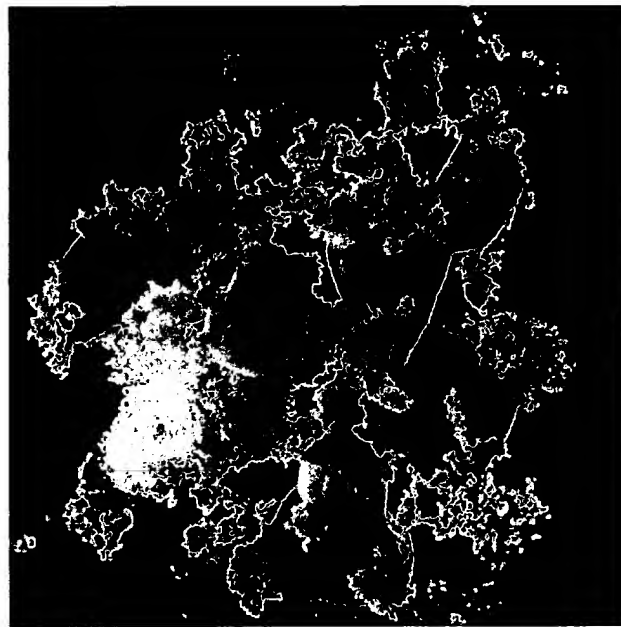


Figure 14

(a)



(b)



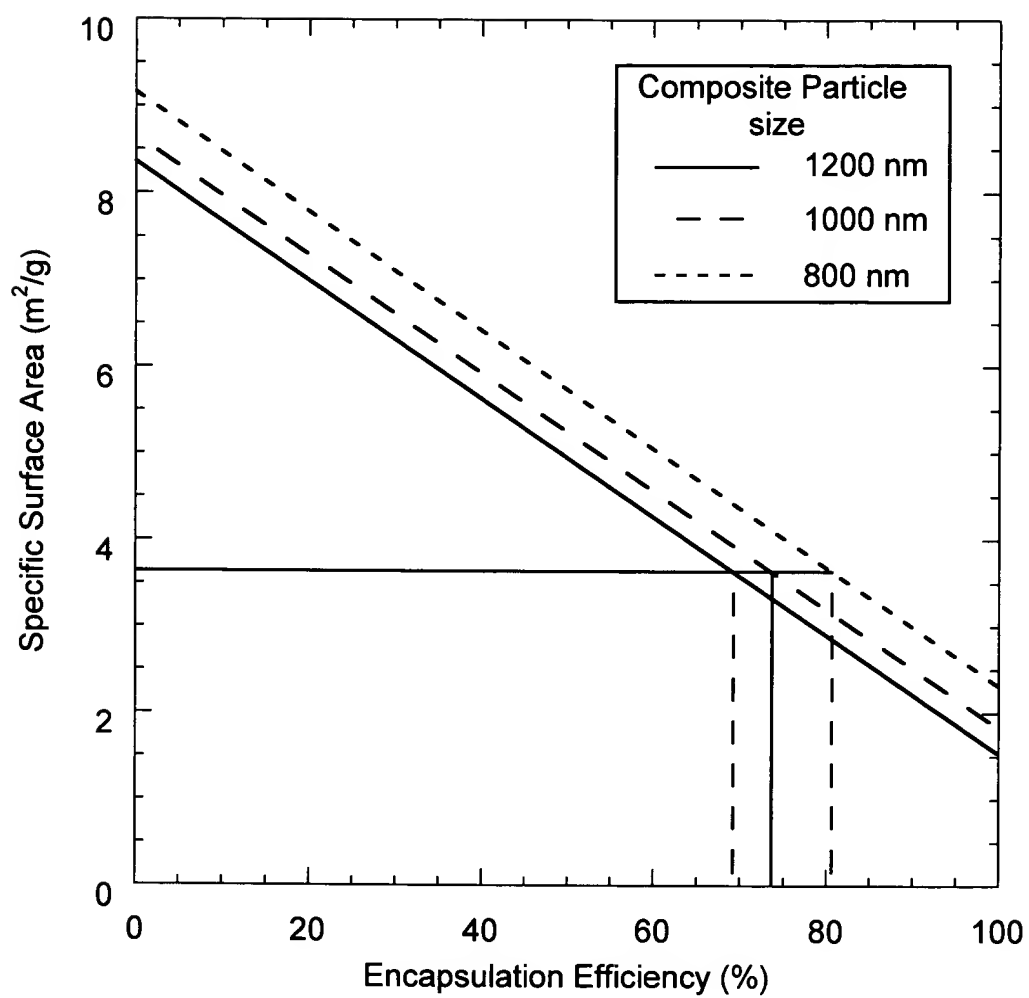


Figure 16